

RHIC BPM Meeting

June 5, 2008

Minutes

Attendees: Justin Gullotta, Rob Michnoff, Michiko Minty, Bob Olsen, Todd Satogata, Chris Degen

1. Discussed Progress and Status (As you can see, Justin was the primary focus here.)
 - a. Justin is coordinating with Frank Naase to prepare a backup DSP and Altera development system.
 - b. Justin performed temperature tests on attenuators and found that after heating one of the two attenuators with a heat gun, the position shifted by only 10 microns. The same result was achieved with the same amplitude signal on both inputs and with a 3dB attenuator on one of the inputs simulating a 6700 micron position offset. This is good news and indicates that the attenuator error due to loading is insignificant.
 - c. Justin will prepare short reports for both the temperature tests that have been performed, including analog signal input variations, timing trigger variations, and attenuator variations.
 - d. Justin has begun the process of archiving Altera gate array files in the drafting area. Rob will supply an example programmed assembly drawing.
 - e. Justin will store DSP code versions in clearcase. A discussion ensued regarding if clearcase is the best option. We decided that although the method for storing the BPM DSP code in clearcase is a somewhat cumbersome, it provides worthwhile revision control.
 - f. Justin explained that we could retrieve the IFE calibration constants via the ADO by setting the triggerSourceS parameter to a value that performs a “fake” calibration, and returns the calibration constants in the data array. ADO and/or higher level programming will be required.

2. Timing calibration with beam

While discussing issues related to understanding calibration differences between an external signal and actual beam, we had a revelation that slight mismatches between the cable pairs could be causing the problem. In a conversation after the meeting, Phil Cerniglia stated that the original cable pair matching specification was 50 picoseconds. This may be even higher when we include the cryostat cables and other cables in the path, including those connected to splitters. Tests need to be performed to confirm this suspicion.

The good news is that if we in fact find that cables are mismatched to unacceptable values ($> \sim 40$ ps), then we already have the tools (DSP calibration code) to calibrate the very fine delay (in 20 ps counts) with beam.

3. Tom Russo reported the following via email prior to the meeting:

1. I am taking care of the feedthrus – 40 are on order – I need to write a sole source before it can go out. I'll try to do it today.
2. I talked to John Benante regarding thermostats at RHIC. He informs me that all of the alcoves already use digital thermostats. He is in the process of relocating AC controls in those areas so they can be remotely reset if they trip.
3. I looked at the plots that Rob posted in e-log. I think. The regulation in the alcoves looks pretty good, except for unexplained precipitous changes. There are 22 locations of BPM units, and I don't have 22 plots. I am assuming that these are the VME FEC temps that are in the log. Rob – maybe you can show either Steven or Phil how to get the data and they can get 22 individual pictures.....
4. The tin work in 1008 has not been completed! I will use outside contractors from now on.....
5. I still need to walk down all the locations with John. I think that 1002a needs a substantial amount of work.

If I missed something, I'll let you know...

Rob replied with the following:

>>There are 22 locations of BPM units, and I don't have 22 plots.
Right. The plots I prepared are for alcoves only.

>>I am assuming that these are the VME FEC temps that are in the log.
I believe that the temperatures I plotted are signals from a wall mounted temperature sensor that provides an analog signal to an MADC input.

>> maybe you can show either Steven or Phil how ...
Sure. Steve may already know how to do this based on plots I saw in the instrumentation elog for 1008 and 1006 temperatures.

4. Upcoming efforts

Some specific work expected to be performed over the next few weeks includes:

- a. TDR DX BPM cable pairs in 1006 and 1008 to determine the end-to-end matching.
- b. Check calibration of IFE modules in 1006b with external signal. This will help us determine if calibration drifting has occurred. (Justin, Phil)
- c. Install and debug operational ADO in lab system (Bob O., Justin)
- d. LogView file creation for average orbit BPM data (Todd)
- e. Document temperature test results (Justin)
- f. Continue generating list of known causes of BAD data (Rob, Todd, Michiko)
- g. Complete preparation of development system backup (Frank Naase, Justin)
- h. Plus additional work shown on the schedule

5. Other

We briefly discussed (and agreed) that it would be worthwhile to remap a few RHIC BPMs to double check the coefficients used to compute position. Chris stated that some work may be required to adapt the RHIC BPM to the wire scanning unit.

Michiko asked if we have scope pictures of BPM signals before and after the filters. We can use the stored BPM profiles to view signals after the filters, but we do not have scope traces of raw signals for comparison. This would be interesting to check when beam returns.